

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original): A solid polymer electrolyte material made of a copolymer comprising a repeating unit based on a fluoromonomer A which gives a polymer having an alicyclic structure in its main chain by radical polymerization, and a repeating unit based on a fluoromonomer B of the following formula (1):



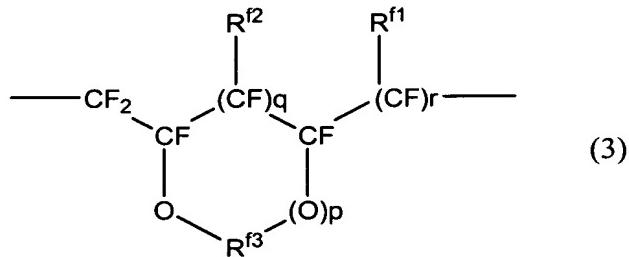
wherein j is 0 or 1, X is a fluorine atom, a chlorine atom or OM {wherein M is a hydrogen atom, an alkali metal atom or a group of $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$ (wherein each of R^1 , R^2 , R^3 and R^4 which may be the same or different, is a hydrogen atom or a monovalent organic group)}, and R^f is a C_{1-20} polyfluoroalkylene group having a straight chain or branched structure which may contain ether oxygen atoms.

Claim 2 (Currently Amended): The solid polymer electrolyte material according to Claim 1, wherein the fluoromonomer A is a perfluoromonomer, and the fluoromonomer B is represented by the following formula (2):

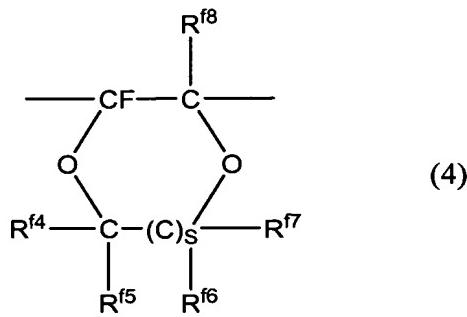


wherein k is an integer of from 0 to 2, m is an integer of from 1 to 12, Y is a fluorine atom or a trifluoromethyl group, and X has the same meaning as X in the above formula (1) where X is a fluorine atom, a chlorine atom or OM {wherein M is a hydrogen atom, an alkali metal atom or a group of $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$ (wherein each of R^1 , R^2 , R^3 and R^4 which may be the same or different, is a hydrogen atom or a monovalent organic group)}.

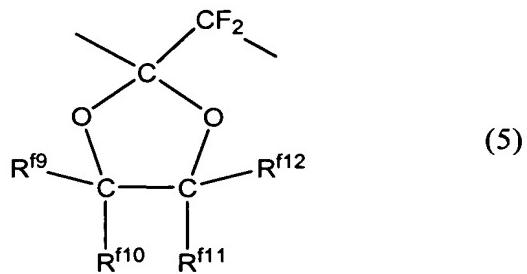
Claim 3 (Original): The solid polymer electrolyte material according to Claim 1, wherein the repeating unit based on the fluoromonomer A is represented by any one of the following formulae (3) to (5):



wherein each of p, q and r which is independent of one another, is 0 or 1, each of R^{f1} and R^{f2} which may be the same or different, is a fluorine atom, a C₁₋₅ perfluoroalkyl group or a C₁₋₅ perfluoroalkoxy group, and R^{f3} is a C₁₋₃ perfluoroalkylene group which may contain a C₁₋₅ perfluoroalkyl group or a C₁₋₅ perfluoroalkoxy group, as a substituent;



wherein s is 0 or 1, each of R^{f4}, R^{f5}, R^{f6} and R^{f7} which may be the same or different, is a fluorine atom or a C₁₋₅ perfluoroalkyl group (provided that R^{f4} and R^{f5} may be connected to form a spiro ring when s is 0), and R^{f8} is a fluorine atom, a C₁₋₅ perfluoroalkyl group or a C₁₋₅ perfluoroalkoxy group; and



(5)

wherein each of R^{f9}, R^{f10}, R^{f11} and R^{f12} which may be the same or different, is a fluorine atom or a C₁₋₅ perfluoroalkyl group.

Claim 4 (Currently Amended): The solid polymer electrolyte material according to

Claim 3, wherein the fluoromonomer B is represented by the following formula (2):



wherein k is an integer of from 0 to 2, m is an integer of from 1 to 12, Y is a fluorine atom or a trifluoromethyl group, and X has the same meaning as X in the above formula (1) wherein X is a fluorine atom, a chlorine atom or OM {wherein M is a hydrogen atom, an alkali metal atom or a group of NR¹R²R³R⁴ (wherein each of R¹, R², R³ and R⁴ which may be the same or different, is a hydrogen atom or a monovalent organic group)}.

Claim 5 (Original): The solid polymer electrolyte material according to Claim 4, wherein the fluoromonomer A is at least one member selected from the group consisting of perfluoro(3-but enyl vinyl ether), perfluoro(2,2-dimethyl-1,3-dioxole), perfluoro(1,3-dioxole), 2,2,4-trifluoro-5-trifluoromethoxy-1,3-dioxole and perfluoro(2-methylene-4-methyl-1,3-dioxolane), and the fluoromonomer B is represented by the following formula (6):



wherein k' is 0 or 1, X has the same meaning as X in the above formula (1), and Y has the same meaning as Y in the above formula (2).

Claim 6 (Original): The solid polymer electrolyte material according to Claim 5, wherein the fluoromonomer A is perfluoro(2,2-dimethyl-1,3-dioxole), and in addition to the fluoromonomer A and fluoromonomer B, a repeating unit based on tetrafluoroethylene is contained.

Claim 7 (Original): The solid polymer electrolyte material according to Claim 1, which has an ion exchange capacity of from 0.5 to 2.5 meq/g dry resin.

Claim 8 (Currently Amended): The solid polymer electrolyte material according to Claim 1, which is a solid polymer electrolyte material wherein the $-\text{SO}_2\text{X}$ group in the formula (1) is a $-\text{SO}_3\text{H}$ group, ~~and which is useful as a material constituting a solid polymer fuel cell.~~

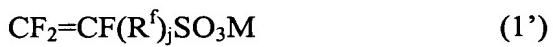
Claim 9 (Original): The solid polymer electrolyte material according to Claim 8, wherein the copolymer has a softening temperature of at least 100°C.

Claim 10 (Currently Amended): The solid polymer electrolyte material according to Claim 2, which is a solid polymer electrolyte material wherein the $-\text{SO}_2\text{X}$ group in the formula (2) is a $-\text{SO}_3\text{H}$ group, ~~and which is useful as a material constituting a solid polymer fuel cell.~~

Claim 11 (Currently Amended): The solid polymer electrolyte material according to Claim 3, which is a solid polymer electrolyte material wherein the $-\text{SO}_2\text{X}$ group in the formula (1) is a $-\text{SO}_3\text{H}$ group, ~~and which is useful as a material constituting a solid polymer fuel cell.~~

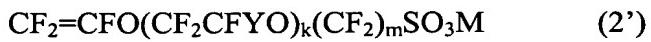
Claim 12 (Currently Amended): The solid polymer electrolyte material according to Claim 4, which is a solid polymer electrolyte material wherein the $-\text{SO}_2\text{X}$ group in the formula (2) is a $-\text{SO}_3\text{H}$ group, ~~and which is useful as a material constituting a solid polymer fuel cell.~~

Claim 13 (Withdrawn): A liquid composition comprising an organic solvent having a hydroxyl group in its molecule, and a solid polymer electrolyte material made of a copolymer comprising a repeating unit based on a fluoromonomer A which gives a polymer having an alicyclic structure in its main chain by radical polymerization, and a repeating unit based on a fluoromonomer B' of the following formula (1'):

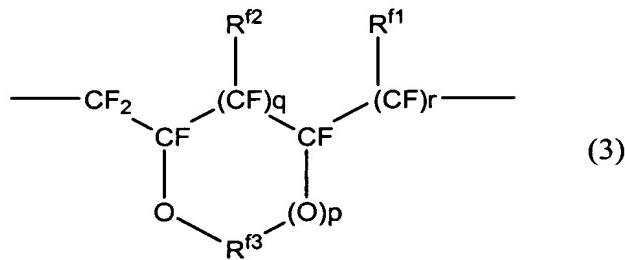


wherein j is 0 or 1, M is a hydrogen atom, an alkali metal atom or a group of $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$ (wherein each of R^1 , R^2 , R^3 and R^4 which may be the same or different, is a hydrogen atom or a monovalent organic group), and R^f is a C_{1-20} polyfluoroalkylene group having a straight chain or branched structure which may contain ether oxygen atoms dissolved or dispersed in the organic solvent.

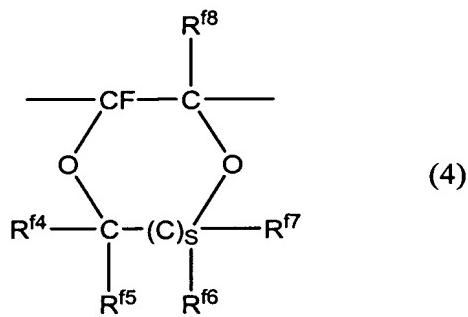
Claim 14 (Withdrawn): The liquid composition according to Claim 13, wherein the fluoromonomer B' is represented by the following formula (2'), and the repeating unit based on the fluoromonomer A is represented by any one of the following formulae (3) to (5):



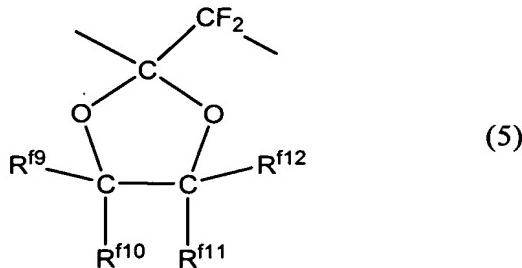
wherein k is an integer of from 0 to 2, m is an integer of from 1 to 12, Y is a fluorine atom or a trifluoromethyl group, and M has the same meaning as M in the above formula (1');



wherein each of p , q and r which is independent of one another, is 0 or 1, each of R^{f1} and R^{f2} which may be the same or different, is a fluorine atom, a C_{1-5} perfluoroalkyl group or a C_{1-5} perfluoroalkoxy group, and R^{f3} is a C_{1-3} perfluoroalkylene group which may contain a C_{1-5} perfluoroalkyl group or a C_{1-5} perfluoroalkoxy group, as a substituent;

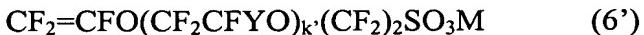


wherein s is 0 or 1, each of R^{f4} , R^{f5} , R^{f6} and R^{f7} which may be the same or different, is a fluorine atom or a C_{1-5} perfluoroalkyl group (provided that R^{f4} and R^{f5} may be connected to form a spiro ring when s is 0), and R^{f8} is a fluorine atom, a C_{1-5} perfluoroalkyl group or a C_{1-5} perfluoroalkoxy group; and



wherein each of R^{f9} , R^{f10} , R^{f11} and R^{f12} which may be the same or different, is a fluorine atom or a C_{1-5} perfluoroalkyl group.

Claim 15 (Withdrawn): The liquid composition according to Claim 14, wherein the fluoromonomer A is at least one member selected from the group consisting of perfluoro(3-but enyl vinyl ether), perfluoro(2,2-dimethyl-1,3-dioxole), perfluoro(1,3-dioxole), 2,2,4-trifluoro-5-trifluoromethoxy-1,3-dioxole and perfluoro(2-methylene-4-methyl-1,3-dioxolane), and the fluoromonomer B' is represented by the following formula (6'):



wherein k' is 0 or 1, M has the same meaning as M in the above formula (1'), and Y has the same meaning as Y in the above formula (2).

Claim 16 (Withdrawn): A solid polymer fuel cell comprising an anode, a cathode and a polymer electrolyte membrane disposed between the anode and the cathode, wherein the cathode contains, as a constituting material, a solid polymer electrolyte material made of a copolymer comprising a repeating unit based on a fluoromonomer A which gives a polymer having an alicyclic structure in its main chain by radical polymerization, and a repeating unit based on a fluoromonomer B' of the following formula (1''):

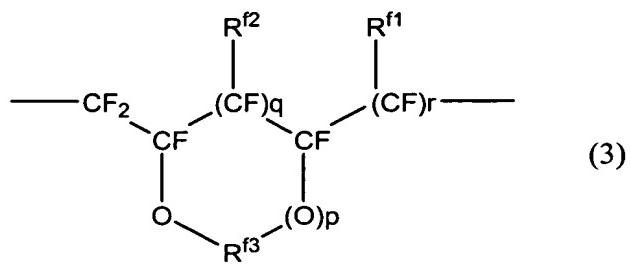


wherein j is 0 or 1, and R^f is a C₁₋₂₀ polyfluoroalkylene group having a straight chain or branched structure which may contain ether oxygen atoms.

Claim 17 (Withdrawn): The solid polymer fuel cell according to Claim 16, wherein the fluoromonomer B' is represented by the following formula (2''), and the repeating unit based on the fluoropolymer A is represented by any one of the following formulae (3) to (5):

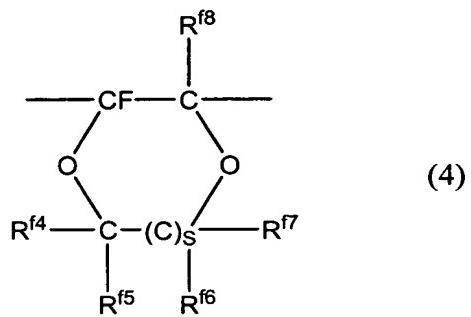


wherein k is an integer of from 0 to 2, m is an integer of from 1 to 12, and Y is a fluorine atom or a trifluoromethyl group;

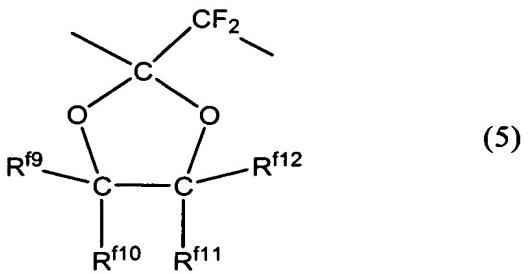


(3)

wherein each of p, q and r which is independent of one another, is 0 or 1, each of R^{f1} and R^{f2} which may be the same or different, is a fluorine atom, a C₁₋₅ perfluoroalkyl group or a C₁₋₅ perfluoroalkoxy group, and R^{f3} is a C₁₋₃ perfluoroalkylene group which may contain a C₁₋₅ perfluoroalkyl group or a C₁₋₅ perfluoroalkoxy group, as a substituent;

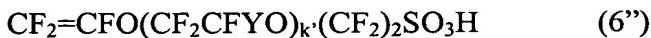


wherein s is 0 or 1, each of R^{f4}, R^{f5}, R^{f6} and R^{f7} which may be the same or different, is a fluorine atom or a C₁₋₅ perfluoroalkyl group (provided that R^{f4} and R^{f5} may be connected to form a spiro ring when s is 0), and R^{f8} is a fluorine atom, a C₁₋₅ perfluoroalkyl group or a C₁₋₅ perfluoroalkoxy group; and



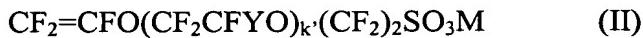
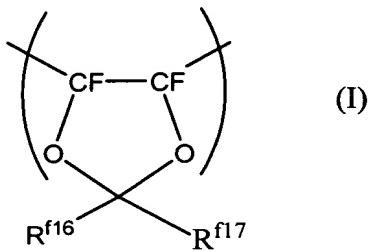
wherein each of R^{f9}, R^{f10}, R^{f11} and R^{f12} which may be the same or different, is a fluorine atom or a C₁₋₅ perfluoroalkyl group.

Claim 18 (Withdrawn): The solid polymer fuel cell according to Claim 17, wherein the fluoromonomer A is at least one member selected from the group consisting of perfluoro(3-butenyl vinyl ether), perfluoro(2,2-dimethyl-1,3-dioxole), perfluoro(1,3-dioxole), 2,2,4-trifluoro-5-trifluoromethoxy-1,3-dioxole and perfluoro(2-methylene-4-methyl-1,3-dioxolane), and the fluoromonomer B' is represented by the following formula (6''):



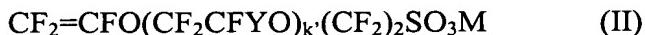
wherein k' is 0 or 1, and Y has the same meaning as Y in the above formula (2).

Claim 19 (Withdrawn): A fluoropolymer which is a copolymer consisting essentially of a repeating unit of the following formula (I) and a repeating unit based on a fluoromonomer D of the following formula (II), wherein the content of the repeating unit based on the fluoromonomer D is from 10 to 75 mol%, and the number average molecular weight is from 5,000 to 5,000,000:



wherein each of R^{f16} and R^{f17} which may be the same or different, is a fluorine atom or a trifluoromethyl group, k' is 0 or 1, Y is a fluorine atom or a trifluoromethyl group, and M is a hydrogen atom, an alkali metal atom or a group of NR¹R²R³R⁴ (wherein each of R¹, R², R³ and R⁴ which may be the same or different, is a hydrogen atom or a monovalent organic group).

Claim 20 (Withdrawn): A fluoropolymer which is a copolymer consisting essentially of a repeating unit based on perfluoro(3-butenyl vinyl ether) and a repeating unit based on a fluoromonomer D of the following formula (II), wherein the content of the repeating unit based on the fluoromonomer D is from 10 to 75 mol%, and the number average molecular weight is from 5,000 to 5,000,000:



wherein k' is 0 or 1, Y is a fluorine atom or a trifluoromethyl group, and M is a hydrogen atom, an alkali metal atom or a group of $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$ (wherein each of R^1 , R^2 , R^3 and R^4 which may be the same or different, is a hydrogen atom or a monovalent organic group).

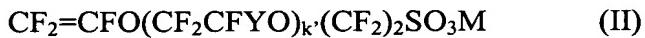
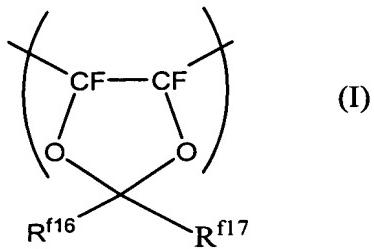
Claim 21 (Withdrawn): A fluoropolymer which is a copolymer consisting essentially of a repeating unit based on perfluoro(2-methylene-4-methyl-1,3-dioxolane) and a repeating unit based on a fluoromonomer D of the following formula (II), wherein the content of the repeating unit based on the fluoromonomer D is from 10 to 75 mol%, and the number average molecular weight is from 5,000 to 5,000,000:



wherein k' is 0 or 1, Y is a fluorine atom or a trifluoromethyl group, and M is a hydrogen atom, an alkali metal atom or a group of $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$ (wherein each of R^1 , R^2 , R^3 and R^4 which may be the same or different, is a hydrogen atom or a monovalent organic group).

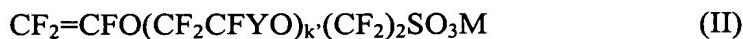
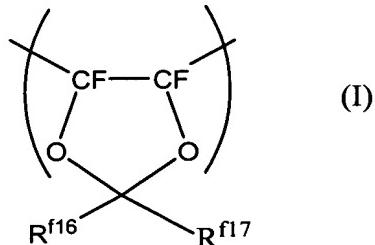
Claim 22 (Withdrawn): A fluoropolymer which is a copolymer consisting essentially of a repeating unit of the following formula (I), a repeating unit based on a fluoromonomer D of the following formula (II), and a repeating unit based on tetrafluoroethylene, wherein the content of the repeating unit of the following formula (I) is from 20 to 60 mol%, the content

of the repeating unit based on tetrafluoroethylene is from 20 to 60 mol%, and the content of the repeating unit based on the fluoromonomer D is from 10 to 40 mol%, and the number average molecular weight is from 5,000 to 5,000,000:



wherein each of $\text{R}^{\text{f}16}$ and $\text{R}^{\text{f}17}$ which may be the same or different, is a fluorine atom or a trifluoromethyl group, k' is 0 or 1, Y is a fluorine atom or a trifluoromethyl group, and M is a hydrogen atom, an alkali metal atom or a group of $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$ (wherein each of R^1 , R^2 , R^3 and R^4 which may be the same or different, is a hydrogen atom or a monovalent organic group).

Claim 23 (Withdrawn): A solid polymer electrolyte membrane which is a membrane made of a polymer electrolyte comprising a copolymer consisting essentially of a repeating unit of the following formula (I), a repeating unit based on a fluoromonomer D of the following formula (II), and a repeating unit based on tetrafluoroethylene, wherein the content of the repeating unit of the following formula (I) is from 20 to 60 mol%, the content of the repeating unit based on tetrafluoroethylene is from 20 to 60 mol%, and the content of the repeating unit based on the fluoromonomer D is from 10 to 40 mol%, and the number average molecular weight is from 5,000 to 5,000,000:



wherein each of $\text{R}^{\text{f}16}$ and $\text{R}^{\text{f}17}$ which may be the same or different, is a fluorine atom or a trifluoromethyl group, k' is 0 or 1, Y is a fluorine atom or a trifluoromethyl group, and M is a hydrogen atom, an alkali metal atom or a group of $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$ (wherein each of R^1 , R^2 , R^3 and R^4 which may be the same or different, is a hydrogen atom or a monovalent organic group).

Claim 24 (New): A solid polymer fuel cell comprising the solid polymer electrolyte material as claimed in Claim 8.

Claim 25 (New): A solid polymer fuel cell comprising the solid polymer electrolyte material as claimed in Claim 10.

Claim 26 (New): A solid polymer fuel cell comprising the solid polymer electrolyte material as claimed in Claim 11.

Claim 27 (New): A solid polymer fuel cell comprising the solid polymer electrolyte material as claimed in Claim 12.